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16 July 1959

MEMORANDUM FOR: Chief, Personnel DPD-DD/P

SUBJECT : Driver Examination of Lovelace Clinic and Wright Field Aero Medical Laboratory.

1. In support of the MERCURY Program, i.e. man-in-space, the Lovelace Foundation has devised a rather thorough physical examination to delve into the intricate parts of man and seek out any fault, flaw, or symptom which would render an individual unfit or potentially unsound for the rigors demanded of a MERCURY Astronaut.

In conjunction with this complex medical examination the U.S. Air Force has employed physical tolerance tests at the Aero Medical Laboratory at Wright Field geared to simulate the stresses which a man-in-space is expected to undergo.

Together with a psychiatric and psychological evaluation also performed at the Aero Medical Laboratory, the combination of Lovelace and Wright wove a fairly tight screen for the sighting of healthy bodies and minds to be selected as the first Astronaut.

Actually the military requirement for high performance aircraft both in speed and altitude had long ago triggered the refinements in flight physical examinations. However, Project MERCURY has added such a popular impetus to aviation medicine, and these particular tests in question, that I feel no wrong in letting MERCURY take the bows from at least the stage of this paper, and can appeal to the people at Lovelace and Wright who have applauded MERCURY as the protagonist. The Astronaut exams are now used by NASA and the Air Force for "regular pilots to a limited degree".

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2. And so on a noon flight on Sunday, 28 June, I left Washington for Albuquerque, New Mexico and on front row seat in observing Lovelace examinations. [redacted] was my worthy traveling companion and with [redacted] and [redacted] whom we met in Albuquerque, was to form the cast of characters for the tests.

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[redacted] met us at our motel and went over the schedules for the exam. He also explained the new IBM machine record cards for medical records and information and asked each examinee to complete the medical history cards. This task lasted well into the night.

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3. Monday morning the Drivers began their tests and I sought out [] I returned [] electroencephalogram, advised Joe that we had located all but one piece of ranch equipment for which Joe is held accountable; and that as soon as we find the missing link we will release him from accountability. Even if we don't find it the fact that it's fraternal equipment has turned up at Edwards [] would indicate that the Air Force or the Project has it somewhere in their channels and we should release him from any liability.

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I told Joe that we would like to get some more copies of the paper titled "Selection Program for Astronauts for the National Aeronautics and Space Administration" by Doctors Lovelace, Schwichtenberg, and Luft; and also would like a dummy folder showing IBM cards etc.

Joe promised to get the paper but said that no dummy folders were in existence. However, he did promise to send pictures which would illustrate various steps in the examination.

I spent the remainder of the week observing the Drivers throughout the examination and have made layman notes as to the mechanisms and machinations involved which are available if desired.

4. On Monday evening the Drivers and I talked assignments. They seemed more perplex than perturbed but certainly some of each. Obviously my undefined, uninformed, and indecisive attitude towards the future which I had expressed to them during my Edwards trip did not jib with the clear cut and quick assignment they received a couple of days after I left.

I explained the situation as it happened, that I was out in left field without a glove while the infield was whipping the ball about. I stated that Col. Burke had used his prerogative in keeping this decision in private channels and that their interrogative cable was instrumental in my enlightenment to the situation. I hastened to add that because of the many angles involved in the Driver assignments it was probably wise to keep questions and answers close to the chest until final decision and by so doing too many hands could not spoil the soup.

They seemed to accept this reasoning though I remain subjectively unconvinced.

I explained that my initial reaction was that the billeting situation would eliminate [] as likely candidate for B, because of their children, however,

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Col. Burke had dispensed with their objective knowing that new three bedroom trailers were on the way and with the addition of a camel shed the housing situation would no longer be a problem. If the three bedroom trailers were not available then housing in the city would be provided. However, from a convenience point of view base housing is preferable and some mothers feel more secure with their children at the base.

A question and answer period followed in which I told them that their families would travel concurrently and they would go commercial air, they could ship 100 lbs of air freight per person in the family; and that each Driver could send 4500 lbs gross of HME and store the rest up to 16,000 lbs. I said that [] would be out within a couple of weeks and would tell them the how, when or where of travel.

[] pointed out that [] may be used to ferry the J-75's over - so this point we left open - but they were quite pleased to know that their families would: 1) probably go commercial air; and, 2) take the outfit's shuttle from Wiesbaden to B.

Confessing that they couldn't talk for [] they expressed his willingness to go to B.

Contract-wise I indicated that if they successfully completed the physical we would either cut the present contract short and write another with the same provisions, or simply amend the present one to terminate a year from now. Their pay would continue in accordance with the present contract, with a post differential of \$250. per month and if base housing were not available they would receive a housing allowance of \$200.

5. On Thursday morning Dr. (Randy) Lovelace called us into his office to check into the Drivers well being, etc. He was still enthusiastic over his Russian trip and willingly entertained questions comparing us and Russia in the field of planes, airports and aviation medicine. The Drivers schedules only permitted 35 minutes with Dr. Lovelace but it took a phone call from the waiting examiners to break the meeting up.

This little meeting went a long way in pleasing the Drivers.

6. Thursday afternoon the Big Four flew up to Los Alamos in a Beechcraft chartered by Lovelace. (expense included in an examination fee). At AEC's Health Research Laboratory we

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contacted a [redacted] who conducted the test. A Horizontal Scintillation Detector was used to determine the amount of POTASSIUM 40 and CESIUM 137 in the body. From the amounts of POTASSIUM 40 can be determined the lean body mass and CESIUM 137 the body radiation count.

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7. On Friday morning I met with Dr. Schwichtenberg who had been away all week. I told him that Jim Cunningham had taken the liberty of showing his paper on the selection program for the Astronauts to [redacted] Deputy Chief of our Medical Staff and that [redacted] was quite interested in it. In fact in [redacted] name I requested two or three more copies. Dr. Schwichtenberg was in full agreement that the mechanical record system was The Thing. He also gave me a prepublication draft of another paper titled "The Development and Use of Medical Machine Record Cards in the Astronaut Selection Program". Since the cards have information concerning the number of hours the Drivers have spent above 60,000 feet I asked him where the pencil cards would be reproduced into IBM cards. He said that a special unit at Kirtland AFB under the command of [redacted] who was formerly with the Project. Hence the security of the cards seems assured, however, he agreed to await headquarters okay before processing them.

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8. On Saturday morning Dr. Schwichtenberg saw each Driver separately and reviewed the results of the examination. He had spent Friday night and early Saturday writing medical summaries on each Driver. After he talked to the Drivers he called me in and talked in general about the good health of our gents. I asked him if he considered our men capable of engaging in a MERCURY type project and he said by all means, with reservation that we await the results of Wright stress tests. I asked if age was a factor as far as our Drivers were concerned and he was quick to discount it. He explained that everyone has two ages, his chronological age and his physiological age. As long as the physiological age is satisfactory then there should be no complications. He opined that our Drivers who were tested compared favorably with the MERCURY Astronauts, in some cases better, some not.

9. He requested that I raised two points back at Headquarters with the top men. One was to initiate some sort of flight surgeon service at Edwards for our Drivers. He said that Lovelace had negotiated a contract with NASA for him to make periodic visits to Edwards and check the health of their pilots, etc, and that possibly while he was out checking NASA pilots he could stop over and see ours. The fee would be smaller than that charged NASA but we didn't

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go into figures since the principle is the issue and not the cost.

His second point surprisingly concerned Driver retirement. I couldn't tie in Lovelace clinical exams with retirement program but Dr. Schwichtenberg was very emphatic in expressing retirement as an important issue. Without going into details I explained that we had worked out an agreement with the Air Force whereby the Drivers would be returned to active duty. The good Doctor said that this was all well and good but if and when they do return to the Air Force they would not be able to compete with the officers of comparable grade who have remained in the Air Force while our men were Driving. Granted that flying proficiency would have been maintained by our men they would not have acquired any experience performing the secondary tasks of an officer such as Commo Officer, Supply Officer, etc., and hence our boys would be out of the running as far as records are concerned, and lacking this experience would probably "fall on their faces".

I pointed out that we had provided adequate compensation during their employment, but hastened to add that the program was originated for short range and hence everything associated with it was looked at from a limited point of view. Since the program has progressed and evolved into a semi-long range activity, the idea of a retirement program for the Drivers may be a valid point well worth consideration.

Promising that I would emphasize his concern in these two matters we parted company.

10. On Sunday morning, 5 July we flew to Dayton. We checked in at Wright Field Monday and found [redacted] quite surprised to see three pilots. He exclaimed that Gen. Flickenger had told him there would be two pilots and one observer. I did not remind him of my phone call which added [redacted] as the third pilot and also requested him to arrange for a chamber indoctrination for me. The latter he also failed to schedule and as a result the chamber was fully booked during our three day stay there.

11. The tests at the Aero Medical Lab were conducted in the Headquarters Aero Medical Lab and two adjacent buildings bearing the shingles Biophysical Building and the Psychological and Physiological Building. [redacted] both Captains in the USAF, spearheaded the examinations. It may be unfair to compare Wright with Lovelace but one could not help notice the difference. Wright was plagued with equipment failure and uncertainty by some testers as to exactly what the test should include. However, I should point out that the individuals

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involved in the testing were sincere in doing a top flight job.

12. The schedules set out for the Drivers to test their physical stress tolerance included a special diet, anthropological measuring and photography (to be used in fitting pressure suits, among others), heat chamber for two hours at 130' F; altitude chamber in a MC-1 suit for one hour at 65,000 ft, a Get-Down Suit (CSU 4/P) run above 65,000, [] went to 180,000, the chamber could go no higher); the Harvard test which required the subject to step up and down on a 20 inch stool at the rate of thirty steps per minute for five minutes. This is a very grueling test used to obtain information ^{on a subject's stamina. The fluorescent light is simply blown into a tube and} maintaining a pressure of 40 mm of mercury for as long as possible. This test indicates the general physical condition of the individual. Then came the ice, the cold pressor test of placing one's feet in ice water for seven minutes and during this time take blood pressure readings. Two runs on the centrifuge interjected some thrill to the affair, one run taking transverse "g's" up to twelve, the other positive to seven. In addition, tests in psychology and psychiatry were conducted which in all seemed a big joke and I questioned that the information derived, if any, is valid.

13. There was constant grilling by the testers as to who the Drivers were and what they were doing. They had informed people that they were Lockheed test pilots working for Gen. Flickenger on a special Air Force Project. When it became obvious that the questioning was going to be a habit with folks I saw [] and asked that he call off the hounds. The questions continued. [] somehow knew the gents were tied into the U-2. He spent a good deal of time searching the office relationship between Gen. Flickenger, [] and myself. I guess he finally capitulated to the fact that he was confused but was going to stay that way.

14. During the stay at Wright the Drivers had criticized the psychological tests. They were offered in such a casual, half-way manner that they were accepted as a joke and answered accordingly. I told [] that I didn't see what was accomplished here and he spoke of environment, etc. I said we know what these boys can do regardless of what the test may prove, i.e. you don't give Ted Williams a navaho test to determine if he's fit for baseball. [] agreed and said that if time was an element we could eliminate the head shrinkers in future tests. However, if we did have the time, they would use the results of our test to establish norms for others!

15. The testing was completed Wednesday afternoon and we


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departed our homeward ways.

16. Attached is a sample schedule of the Lovelace examination and also a breakdown of the costs involved.



Attachment:
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Distribution:
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1 -  (Trip Report file)
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